UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2874	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
	09/945,314	BRUN ET AL.
Office Action Summary	Examiner	Art Unit
	Kevin S Wood	2874

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-49_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-49_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _25 March 2002_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____ .

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _4_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.   Claims 42-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 42-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4.   Claims 1- 16, 20 and 45-49 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,322,256 to Inada et al.

Referring to claims 1, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses a ferrule (10) having a capillary (2) extending axially through the ferrule, and at least four optical fibers (5) positioned inside of the capillary. Inada also discloses that the capillary and the outer dimensions of the fiber need to satisfy certain relationships or tolerances. See col. 1, lines 53 through col. 2, lines 56. It is inherent that all fibers would be produced to satisfy certain predetermined tolerances for core concentricity and certain tolerances for the outer dimension of the cladding.

Referring to claims 2 and 3, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the tolerances of the capillary are within $\pm 1 \mu m$. See col. 6, lines 16-45.

Referring to claim 4, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the tolerances of the capillary are within $\pm 1 \mu m$. See col. 6, lines 16-45. It is clear that a tolerance of $\pm 0.5 \mu m$ would fall within the tolerances disclosed by Inada et al.

Referring to claims 5 and 8, Inada et al. discloses all the limitations of the claimed invention. Inada et al. shows that the capillary may be substantially a parallelogram or it may be rectangular. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances where $L = (2D) + 2.0 \mu m$ are within the range disclosed by Inada et al.

Referring to claims 6 and 9, Inada et al. discloses all the limitations of the claimed invention. Inada et al. shows that the capillary may be substantially a parallelogram or it may be rectangular. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances where $L = (2D) + 1.0 \mu m$ are within the range disclosed by Inada et al.

Referring to claims 7 and 10, Inada et al. discloses all the limitations of the claimed invention. Inada et al. shows that the capillary may be substantially a parallelogram or it may be rectangular. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances where $L = (2D) + 0.5 \mu m$ are within the range disclosed by Inada et al.

Referring to claim 11, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances of $L = (2D) + \Delta + 2.0 \mu m$, where Δ is the minimum distance between the surfaces of adjacent fibers, are within the range disclosed by Inada et al. It is inherent within the invention of Inada et al. that the space between adjacent fibers as small as possible.

Referring to claim 12, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances of $L = (2D) + \Delta + 1.0\mu m$, where Δ is the minimum distance between the surfaces of adjacent fibers, are within the range disclosed by Inada et al. It is inherent within the invention of Inada et al. that the space between adjacent fibers as small as possible.

Referring to claim 13, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances of $L = (2D) + \Delta + 0.5\mu m$, where Δ is the minimum distance between the surfaces of adjacent fibers, are within the range disclosed by Inada et al. It is inherent within the invention of Inada et al. that the space between adjacent fibers as small as possible.

Referring to claim 14, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the dimensions of $L = (3D) + 2.0\mu m$ are within the range disclosed by Inada et al. when n=3.

Referring to claim 15, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances of $L = (3D) + 1.0 \mu m$ are within the range disclosed by Inada et al. when n=3.

Referring to claim 16, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses that the length of the sides of the capillary are given by $nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the capillary and n is the number of fibers along that dimension of the capillary. See col. 8, lines 16-39. It is clear that the claimed tolerances of $L = (3D) + 0.5 \mu m$ are within the range disclosed by Inada et al. when n=3.

Referring to claim 20, Inada et al. discloses a ferrule (10) having a capillary (2) extending axially through the ferrule and at least four optical fibers positioned inside of the capillary, where the ferrule is formed from to two members and the capillary is formed from two matching grooves in the two members. See col. 6, lines 45-48.

Referring to claim 45, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses a fiber ferrule, wherein the ferrule comprises a cylindrical glass rod comprising at least one capillary, wherein the capillary configuration is a rounded square or rounded rectangle.

Referring to claim 46, Inada et al. discloses all the limitations of the claimed invention. Inada et al. discloses a fiber ferrule, wherein at least tow pair of optical fibers

define a separation distance, and the capillary supports that the separation distances

are is may be equal and is as small as possible.

Referring to claims 47 and 48, Inada et al. discloses all the limitations of the

claimed invention. Inada et al. discloses that the tolerances of the capillary are within

$\pm 1\mu m$. See col. 6, lines 16-45.

Referring to claim 49, Inada et al. discloses all the limitations of the claimed

invention. Inada et al. discloses that the tolerances of the capillary are within $\pm 1\mu m$.

See col. 6, lines 16-45. It is clear that a tolerance of $\pm 0.5\mu m$ would fall within the

tolerances disclosed by Inada et al.

5.   Claims 26 and 37-41 are rejected under 35 U.S.C. 102(e) as being anticipated by

U.S. Patent No. 6,364,539 to Shahid.

Referring to claim 26, Shahid discloses all the limitations of the claimed

invention. Shahid fiber optic assembly, including a ferrule (10) having at least two fiber

capillaries extending axially through the ferrule and at least four optical fibers (16)

positioned inside the capillaries. See the figures of the reference. It is inherent within

the invention that the capillaries and optical fibers satisfy predetermined tolerances.

Referring to claim 37, Shahid discloses all the limitations of the claimed

invention. Shahid discloses the capillaries are formed from two wafers (14), each of the

wafers comprising matching grooves (58) that form the capillaries when the wafers are

aligned.

Referring to claim 38, Shahid discloses all the limitations of the claimed invention. Shahid discloses the wafers (14) also comprise matching alignment grooves (60).

Referring to claim 39, Shahid discloses all the limitations of the claimed invention. Shahid discloses alignment pins positioned in the alignment grooves.

Referring to claim 40, Shahid discloses all the limitations of the claimed invention. Shahid discloses an optical fiber ferrule (10) including, a pair of silicon wafers (14), each wafer having at least one fiber groove (58) positioned such that the fiber grooves match with the fiber grooves on the other wafer to support the optical fibers and each wafer also having at leas one alignment groove (60), wherein the position of each of the at least one alignment grooves match the position of alignment grooves on the other wafer such that the alignment grooves act together to support at least one alignment pin.

Referring to claim 41, Shahid discloses all the limitations of the claimed invention. Shahid discloses alignment pins positioned in the alignment grooves.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

8.   Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Patent No. 6,322,256 to Inada et al.

        Referring to claim 17, Inada et al. discloses all the limitations of the claimed

invention, except Inada et al. does not appear to specifically disclose that the tolerance

for core concentricity is $1.0 \mu m$ or that the tolerance for ovality of the fibers is 0.8 percent.

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize these tolerances, since it has been held that discovering

an optimum value of a result effective variable involves only routine skill in the art. *In re*

Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

        Referring to claim 18, Inada et al. discloses all the limitations of the claimed

invention, except Inada et al. does not appear to specifically disclose that the tolerance

for core concentricity is $0.5 \mu m$ or that the tolerance for ovality of the fibers is 0.4 percent.

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize these tolerances, since it has been held that discovering

an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).*

Referring to claim 19, Inada et al. discloses all the limitations of the claimed invention, except Inada et al. does not appear to specifically disclose that the tolerance for core concentricity is $0.1 \mu m$ or that the tolerance for ovality of the fibers is 0.12 percent. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize these tolerances, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).*

9.   Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,608,827 to Boscher et al. in view of U.S. Patent No. 6,364,539 to Shahid.

Referring to claim 21, Boscher et al. discloses all the limitations of the claimed invention, except Boscher doesn't appear to disclose each wafer including a least one alignment groove which form an alignment capillary when the wafers are aligned. Shahid discloses a ferrule similar to that of the claimed invention that includes alignment grooves (40) for the purpose of ensuring that the support members remain properly aligned. See the figures of the reference. Since Boscher et al. and Shahid are both from the same field of endeavor, the purpose disclosed by Shahid would have been recognized in the pertinent art of Boscher et al. It would have been obvious at the time

the invention was made to a person having ordinary skill in the art to utilize alignment

grooves for ensuring that the support members remain properly aligned.

Referring to claim 22, Boscher et al. in view of Shahid discloses all the limitations

of the claimed invention. Shahid discloses an alignment pin positioned in the alignment

capillary formed by the alignment grooves.

Referring to claim 23-25, Boscher et al. in view of Shahid discloses all the

limitations of the claimed invention. Shahid does not appear to specifically disclose that

the tolerance for the diameter of the alignment rod is $2.0 \mu m$, $1.0 \mu m$ or $0.5 \mu m$. It would

have been obvious to one having ordinary skill in the art at the time of the invention was

made to utilize precise tolerances, since it has been held that discovering an optimum

value of a result effective variable involves only routine skill in the art. *In re Boesch, 617*

F.2d 272, 205 USPQ 215 (CCPA 1980).

10.   Claims 26-32 and 34-36 are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Patent No. 6,322,256 to Inada et al.

Referring to claim 26, Inada et al. discloses all the limitations of the claimed

invention, except Inada et al. does not disclose more than one fiber capillary extending

axially though the ferrule. It would have been obvious one having ordinary skill at the

time the invention was made to have multiple fiber capillaries, since in has been held

that mere duplication of the essential working parts of a device involves only routing skill

in the art. *St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.*

Referring to claims 27 and 28, Inada et al. discloses all the limitations of the

claimed invention. Inada et al. discloses that the tolerances of the capillary are within

$\pm 1 \mu m$. See col. 6, lines 16-45.

Referring to claim 29, Inada et al. discloses all the limitations of the claimed

invention. Inada et al. discloses that the tolerances of the capillary are within $\pm 1 \mu m$.

See col. 6, lines 16-45. It is clear that a tolerance of $\pm 0.5 \mu m$ would fall within the

tolerances disclosed by Inada et al.

Referring to claim 30, Inada et al. discloses all the limitations of the claimed

invention. Inada et al. discloses that the length of the sides of the capillary are given by

$nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the

capillary and n is the number of fibers along that dimension of the capillary. See col. 8,

lines 16-39. It is clear that the claimed tolerances of $L = (2D) + \Delta + 2.0 \mu m$, where Δ is the

minimum distance between the surfaces of adjacent fibers, are within the range

disclosed by Inada et al. It is inherent within the invention of Inada et al. that the space

between adjacent fibers as small as possible.

Referring to claim 31, Inada et al. discloses all the limitations of the claimed

invention. Inada et al. discloses that the length of the sides of the capillary are given by

$nD < L \le (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the

capillary and n is the number of fibers along that dimension of the capillary. See col. 8,

lines 16-39. It is clear that the claimed tolerances of $L = (2D) + \Delta + 1.0 \mu m$, where Δ is the

minimum distance between the surfaces of adjacent fibers, are within the range

disclosed by Inada et al. It is inherent within the invention of Inada et al. that the space

between adjacent fibers as small as possible.

Referring to claim 32, Inada et al. discloses all the limitations of the claimed

invention. Inada et al. discloses that the length of the sides of the capillary are given by

$nD < L \leq (n+0.05)D$, where D is the outer diameter of the fiber, L is the dimension of the

capillary and n is the number of fibers along that dimension of the capillary. See col. 8,

lines 16-39. It is clear that the claimed tolerances of $L = (2D) + \Delta + 0.5\mu m$, where Δ is the

minimum distance between the surfaces of adjacent fibers, are within the range

disclosed by Inada et al. It is inherent within the invention of Inada et al. that the space

between adjacent fibers as small as possible.

Referring to claim 33, Inada et al. does not appear to specifically disclose that the

capillary cross-sections are substantially oval. It would have been obvious matter of

design choice to form a capillary that is substantially oval, since applicant has not

disclosed that making the capillary oval solves any stated problem or is for any

particular purpose and it appears that the invention would perform equally well in other

shapes.

Referring to claim 34, Inada et al. discloses all the limitations of the claimed

invention, except Inada et al. does not appear to specifically disclose that the tolerance

for core concentricity is $1.0\mu m$ or that the tolerance for ovality of the fibers is 0.8 percent.

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize these tolerances, since it has been held that discovering

an optimum value of a result effective variable involves only routine skill in the art. *In re*

Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Referring to claim 35, Inada et al. discloses all the limitations of the claimed

invention, except Inada et al. does not appear to specifically disclose that the tolerance

for core concentricity is $0.5 \mu m$ or that the tolerance for ovality of the fibers is 0.4 percent.

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize these tolerances, since it has been held that discovering

an optimum value of a result effective variable involves only routine skill in the art. *In re*

Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Referring to claim 36, Inada et al. discloses all the limitations of the claimed

invention, except Inada et al. does not appear to specifically disclose that the tolerance

for core concentricity is $0.1 \mu m$ or that the tolerance for ovality of the fibers is 0.12

percent. It would have been obvious to one having ordinary skill in the art at the time

the invention was made to utilize these tolerances, since it has been held that

discovering an optimum value of a result effective variable involves only routine skill in

the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).*

Conclusion

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kevin S Wood whose telephone number is (703) 605-

5296. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 307-0956.

KSW
January 9, 2003

Brian Healy
Primary Examiner